7.6 Separation of Variables (General Solutions) **Notes**

Recall: **Implicit differentiation** $x^2 + y^2 = 9$

Separation of variables is like implicit differentiation backwards.

Find the general solution of each differential equation.

1. $\dfrac{dy}{dx} = \dfrac{x^2}{y}$

2. $\dfrac{dy}{dx} = (\sin x)y^2$

3. $\dfrac{dy}{dx} = xy$

4. $\dfrac{dy}{dx} = 2xy + 4x$

Find the general solution of each differential equation.

1. $\dfrac{dy}{dx} = \dfrac{3x^2}{y}$

2. $\dfrac{dy}{dx} = 8x^2 y$

3. $\dfrac{dy}{dx} = e^x y^2$

4. $\dfrac{dy}{dx} = -2x(y-3)$

5. $\dfrac{dy}{dx} = y \cos x$

6. $\dfrac{dy}{dx} = (y + 5)(x + 2)$

7. $\dfrac{dy}{dx} = e^{x-y}$

8. $\dfrac{dy}{dx} = \dfrac{2x}{e^{2y}}$

No Test Prep. We will wait for our next lesson when we can use *particular solutions* with separation of variables.